

AMENDMENTS TO THE CLAIMS:

- Claim 1. (Currently amended) A cross joint comprising:
- a cross shaft member comprising; ~~including~~;
- a four ~~pieces of~~ shafts each comprising having a neck portion and a race portion; and
- shoulder portions ~~provided~~ between adjacent ~~two~~ neck portions;
- rolling members adapted to rotate on the race portions; and
- bearing cups ~~outer ring members~~ fitted to the respective shafts via the rolling members,
- wherein the race portions and the shoulder portions are subjected to roller burnishing for increasing a hardness of each surface of the race portions and the shoulder portions and for increasing a residual compressive stress immediately below each of said surfaces.
- Claim 2. (Currently amended) The cross joint according to claim 1, wherein a race portion formed on a bearing cup ~~the outer ring member~~ is subjected to roller burnishing.
- Claim 3. (Currently amended) The cross joint according to Claim 1, wherein a residual compressive stress at a depth of approximately ~~at least~~ 0.3mm from each of surfaces of the race portions and the shoulder portions ~~portion~~ subjected to the roller burnishing is ~~made to~~ be equal to or larger than 800 MPa.
- Claim 4. (Currently amended) The cross joint according to Claim 1, wherein the cross shaft member and the bearing cups ~~comprise~~ ~~outer ring member~~ ~~includes~~ a carbon steel ~~for a~~

~~mechanical structure~~ having a carbon content equal to or larger than 0.42 weight %.

Claim 5. (Original - withdrawn) A method of manufacturing a cross joint which includes: a cross shaft member including, a four pieces of shafts each having a neck portion and a race portion, and shoulder portions provided between adjacent two neck portions; rolling members adapted to rotate around the race portions; and outer ring members fitted to the respective shafts via the rolling members, the method comprising the step of subjecting the race portions and the shoulder portions to roller burnishing.

Claim 6. (Original - withdrawn) The method according to claim 5 further comprising the step of subjecting a race portion formed on the outer ring member to roller burnishing.

Claim 7. (New) The cross joint of claim 1, wherein said shoulder portions each comprise a round-shaped section.

Claim 8. (New) The cross joint of claim 7, wherein said round-shape section has a center of curvature at an outer side of said cross shaft member.

Claim 9. (New) The cross joint of claim 7, wherein said round-shape section has a center of curvature at an inner side of said cross shaft member.

Claim 10. (New) The cross joint of claim 1, wherein at least one of said four shafts comprises a trunnion.

Claim 11. (New) The cross joint of claim 1, wherein at least one of said roller members comprises a cylindrical roller.

Claim 12. (New) The cross joint of claim 1, wherein at least one of said roller members comprises a needle roller.

Claim 13. (New) The cross joint of claim 1, wherein at least one of said shoulder portions comprises a hardness approximately equal to or larger than Hv700 from a surface to at least a depth of approximately 0.2 millimeters.

Claim 14. (New) The cross joint of claim 13, wherein at least one of said shoulder portions comprises a hardness approximately equal to or larger than Hv700 from a surface to at least a depth of approximately 0.4 millimeters.

Claim 15. (New) The cross joint of claim 1, wherein at least one of said shoulder portions comprises a linear-shaped section.

Claim 16. (New) A cross joint comprising:

- a cross shaft comprising:

- a plurality of shafts each comprising a neck and a race, and

- at least one roller-burnished shoulder between two of said necks; and

- at least one roller on said race; and

- a bearing cup fitted to one of said plurality of shafts via said at least one roller.

Claim 17. (New) The cross joint of claim 16, wherein at least one of said races comprises a roller-burnished race.

Claim 18. (New) The cross joint of claim 16, wherein said roller-burnished race comprises a residual compressive stress substantially equal to or larger than 800 Mpa from a surface to a depth of approximately 0.3 millimeters.

Claim 19. (New) The cross joint of claim 16, wherein said bearing cup comprises a roller burnished race.

Claim 20. (New) The cross joint of claim 16, wherein said roller-burnished shoulder comprises a residual compressive stress substantially equal to or larger than 800 Mpa from a surface to a depth of approximately 0.3 millimeters.

Claim 21. (New) The cross joint of claim 16, wherein said cross shaft comprises a carbon steel.

Claim 22. (New) The cross joint of claim 21, wherein said carbon steel comprises a carbon content approximately equal to or larger than 0.42 percentage by weight.

Claim 23. (New) The cross joint of claim 16, wherein said bearing cup comprises a carbon steel.

Claim 24. (New) The cross joint of claim 23, wherein said carbon steel comprises a carbon content approximately equal to or larger than 0.42 percentage by weight.

Claim 25. (New) The cross joint of claim 16, wherein said at least one roller-burnished shoulder comprises a round-shaped section.

Claim 26. (New) The cross joint of claim 25, wherein said round-shaped section has a center of curvature at an outer side of said cross shaft.

Claim 27. (New) The cross joint of claim 25, wherein said round-shaped section has a center of curvature at an inner side of said cross shaft.

Claim 28. (New) The cross joint of claim 16, wherein at least one of said plurality of shafts comprises a trunnion.

Claim 29. (New) The cross joint of claim 16, wherein said at least one roller comprises a cylindrical roller.

Claim 30. (New) The cross joint of claim 16, wherein said at least one roller comprises a needle roller.

Claim 31. (New) The cross joint of claim 16, wherein said at least one roller-burnished shoulder comprises a hardness approximately equal to or larger than Hv700 from a surface to

at least a depth of approximately 0.2 millimeters.

Claim 32. (New) The cross joint of claim 31, wherein said at least one roller-burnished shoulder comprises a hardness approximately equal to or larger than Hv700 from a surface to at least a depth of approximately 0.4 millimeters.

Claim 33. (New) The cross joint of claim 16, wherein said at least one roller-burnished shoulder comprises a linear-shaped section.

Claim 34. (New) The cross joint of claim 16, wherein the roller burnishing of the shoulder increases a surface hardness of the shoulder.

Claim 35. (New) The cross joint of claim 16, wherein the roller burnishing of the shoulder increases a residual compressive stress immediately below the surface of the shoulder.

Claim 36. (New) The cross joint of claim 17, wherein the roller burnishing of the race increases a surface hardness of the race.

Claim 37. (New) The cross joint of claim 17, wherein the roller burnishing of the race increases a residual compressive stress immediately below the surface of the race.